

# New Features of the Loader “D300winV2”

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## 1. Introduction

D300win is a program development support tool in compliance with IEC61131-3 and provides full support of the programmable controller (PLC) for the first time in Japan. Functionality and performance have been improved continuously since the first edition, incorporating the demands of many users. Fuji Electric now offers D300win Version 2 (D300winV2) which, based on those demands, greatly improves the ease of operation by using the latest Windows\*<sup>1</sup> technology. In this report, the main features of D300winV2 are introduced.

## 2. New Features of D300winV2

D300winV2 shifts completely to a 32-bit system, and provides many new features and high performance. Some of the main features are described below.

### 2.1 More comfortable programming support environment

An API (application program interface) for a 32-bit system is used to provide an interface with optimal look and feel. The main features are enumerated below.

- (1) Quick window selection (dockable window, over view window, etc.)
- (2) Toolbar customizing for desired functions.
- (3) Keyword emphasized display to prevent careless mistakes.
- (4) User can set short cuts to each menu item.

Figure 1 shows the overall display of D300winV2.

### 2.2 Project handling

To make the IEC61131-3 structure more user friendly, the handling of projects was simplified by the following functions.

- (1) New project view

The new project view consists of the project, POU (program organization unit), libraries, physical hardware, and the instances (execution object) as shown in

Fig.1 Overall display of D300winV2

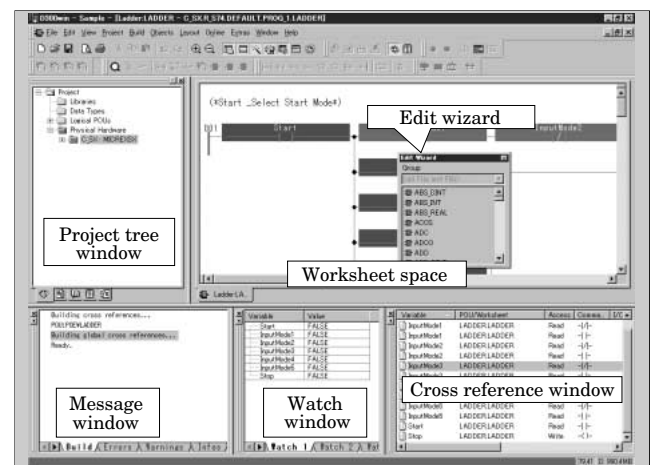


Fig. 2. These corresponded well with the concept of the IEC61131-3, and consequently, the overall view and partial views can be switched quickly.

- (2) Easy and quick insertion of the IEC61131-3 structure

The menu and the toolbar can insert the POU, data type, library, and the configuration (configuration of PLC) easily and quickly.

- (3) Project wizard

The wizard is a function to simplify the operation by providing selectable guidance choices.

Knowledge of the IEC61131-3 was indispensable in the creation of new projects. New projects can be created by using templates already prepared for the former method, but with D300winV2, new products can be created more easily by using the project wizard.

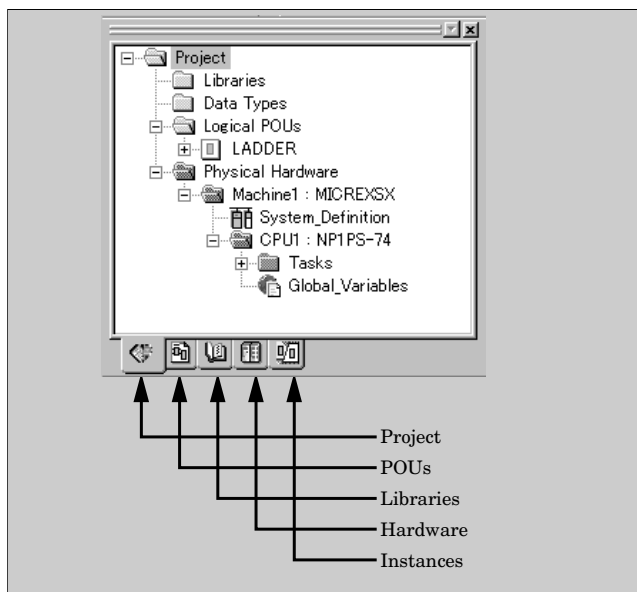
A new project outline can be created simply with several selections according to the dialog shown in Fig. 3.

### 2.3 Quick IEC programming with assistance from the wizard

The edit wizard is a useful tool which facilitates the insertion and exchange of functions and function blocks of all languages, the keywords and statements of ST (structured text) language, and the operands of IL language. By using this tool, the user need not

\*1 Windows: A registered trademark of US Microsoft Corp., USA

Fig.2 New project view



know the syntax for all statements. Moreover, the use of the edit wizard with the text editor prevents syntax errors such as a missing semicolon or a missing end-statement for a selection/repetition statement.

Figure 4 shows the Fuji Electric original function block with many parameters having been inserted into the ST worksheet using the edit wizard. The call of the function block can be described by simply filling in the variables according to the data type displayed between “(” and “)”.

## 2.4 Graphical editor

To improve the description, the visual check, and the productivity of the graphic editor most often used for the program development, the following functions have been added to D300winV2.

### (1) Automatic arrangement of graphical elements

In a graphical language worksheet, the LD (ladder diagram), FBD (function block diagram), and SFC (sequential function chart) graphic elements are moved to the nearest grid edge automatically by the grid function and are automatically aligned in the horizontal or vertical direction.

### (2) User defined color settings

The color of all object types can be selected, and the user can improve the ease of visual check.

### (3) Tool chip for online values

The tool chip is small help display that appears when the cursor is moved over a button or other object. To make online values easy to read in a worksheet that has been miniaturized to show the overall display in D300winV2, online values are displayed within the tool chip.

Figure 5 is an example of displaying an online value with a tool chip in a miniaturized graphical worksheet.

Fig.3 Project wizard

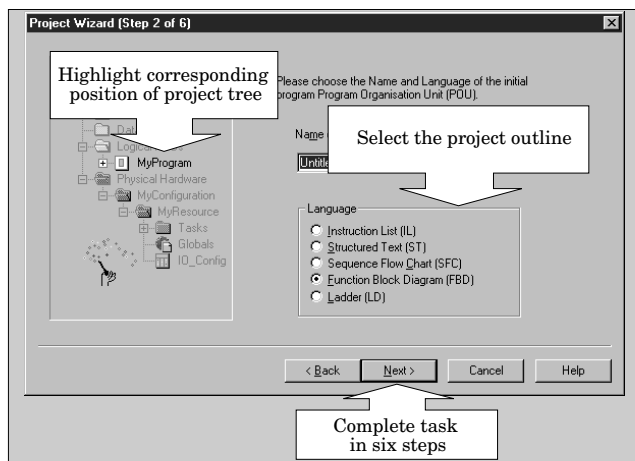


Fig.4 Example of using edit wizard

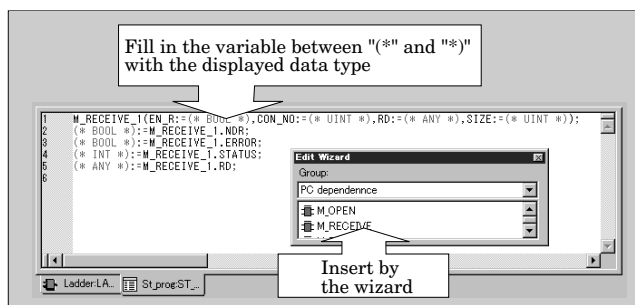
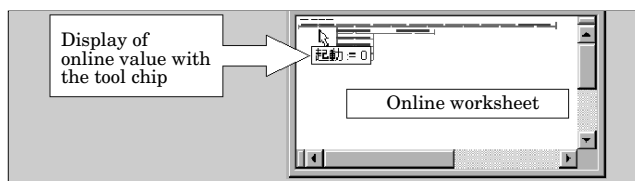


Fig.5 Example of displaying online value using tool chip



### (4) Multiple line comments

A comment block, consisting of several lines of comments, can be created.

### (5) Decrease of object collisions

Objects are automatically moved to empty spaces, decreasing the possibility of collision.

### (6) Clipboard for SFC elements

Copying and pasting by means of the clipboard can be performed even with SFC elements, improving the productivity of the SFC program.

### (7) Drag and drop for all objects

Similar to a circuit in the worksheet, all objects such as FB, contacts or variables are easily moved and copied by means of drag and drop.

## 2.5 Powerful online functions

### (1) Powerful cross-reference function

The cross-reference function of the D300winV2 can display an abundance of information (use instructions, comments, R/W, etc.) as shown in Fig.6, and has functions such as sort, jump-to-code, and filter, which

Fig.6 Powerful cross referencing, and monitor of array/structure for easy debugging

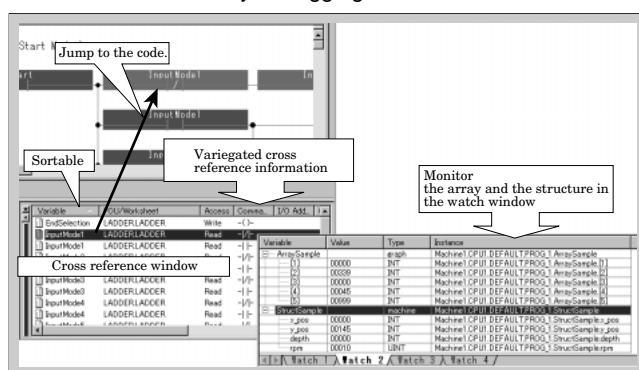
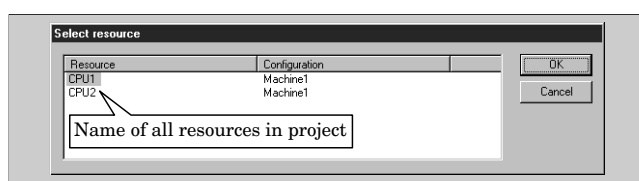


Fig.7 Reduced complexity of multi-CPU systems by resource selection



are very useful for debugging.

The cross-reference function is available both on-line and offline.

(2) Watch window also useful for arrays and structures

In D300win, the window where the value of the variable is displayed for debugging is called the watch window.

Debugging a user defined data type such as an array or a structure has become easier with V2 than with V1. Figure 6 shows an example display of an array and a structure in the watch window.

(3) Improved handling of multiple CPUs

In a multi-CPU system, the user should select a resource (CPU) for online communication. With V1, the user had to select the resource from the project tree. With V2, because the user can select the resource via a dialog at the beginning of online operation, the complexity of multi-CPU handling is reduced. Figure 7 shows the resource selection dialog display after the online mode has been selected.

## 2.6 Multi-lingual projects

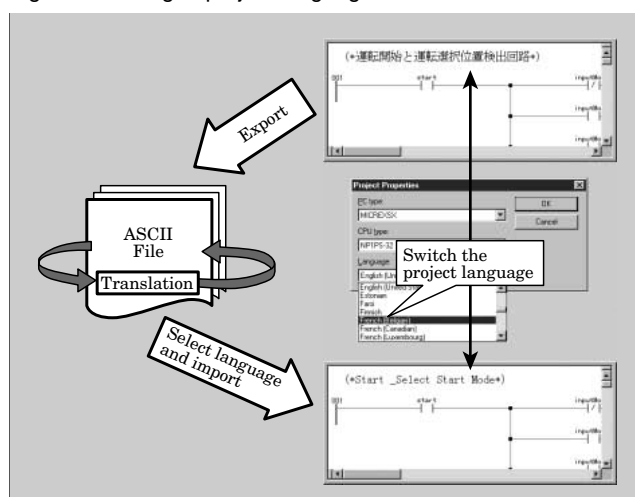
It is necessary to make localization (modification of software to be suitable for a specific region) functions more powerful to meet the trend of globalization. In D300winV2, therefore, the following functions were developed.

(1) Complete support of the Japanese (double-byte character) language

Double-byte characters were supported with all user interfaces including the tree part. As a result, all Asian languages can be supported, including Japanese.

(2) Project language

Fig.8 Switching of project language



Translated description worksheets and comments prepared for localization can be displayed in various languages. Concretely, description worksheets and comments are exported from the project to ASCII file first, then translated, and then imported to the project again. Finally, they are displayed in the language of the destination country. Figure 8 shows the procedure for switching the project language of the D300win by exporting and importing the description worksheet and comments, and also shows an example of the switched comments.

## 2.7 Faster compiling

Performance characteristics of the display such as the drawing speed improve due to the benefit of 32 bits compared with the previous D300winV1 (16-bit) system. The time for compilation is less than one half that of the previous system, due to the benefit of 32 bits and an improved algorithm.

Therefore, instances where the compilation speed is an issue will decrease under the present general environment.

Table 1 shows the system requirements of D300winV2.

## 3. Integrated Development Environment Based on D300win

Following the release of V1, application development software (support tool for extended function block for position control, PID control, failure diagnosis, POD editor, etc.) to simplify the application development using MICREX-SX has been offered. This software is based on the functions (such as the variable name service function) provided with D300win that enable variable information in the project to be easily used. Of course, these basic functions are also supported in V2.

In addition, D300winV2 provides the following

Table 1 D300winV2 system requirements

Item		Specification
Hardware		IBM-AT compatible machine or NEC PC98 series
CPU		Intel pentium 133MHz or higher is recommended.
Hard disk drive		Minimum one drive, minimum 100MB free disk space
Floppy disk drive		Minimum one drive, media size 3.5 inches
2HD		(1.25MB/1.44MB)
Necessary memory		32MB or more
Resolution of display		VGA 640×400 dots or higher XGA 1,024×768 dots (recommended)
Communications interface	RS-232C	9,600bps to 38.4kbps(set default according to the resource type)
	Maximum rate	
	Ethernet <sup>*1</sup>	Yes
	ISDN	Yes
Operating system(OS)		Windows 95/98/NT4.0 <sup>*2</sup>
Portability		According to the commercial portable personal computer
Environmental tolerance		According to environmental condition of the commercial personal computer
Languages		Japanese and English

\*1 Ethernet : A trademark of Xerox Corporation

\*2 Windows 95/98/NT4.0 : A trademark of Microsoft Corporation

functions that enable commercial software (VB<sup>\*2</sup> applications, Excel<sup>\*3</sup>, etc.) to use variable information in the project.

#### (1) Import/export function for variable files

Variable information from the project can be

converted into comma separated value (CSV) format and export to a text file. Moreover, the comma separated value text file can be converted, and import to the project.

As a result, commercial software can process and use data easily.

#### (2) More powerful variable name service

The range of variable name service function was expanded and made more powerful. That is, derived data types that are more complex such as arrays and structures, and multi-variable worksheets, were added to the range of service. As a result, application development is even further simplified.

The integrated development environment that centers on D300win by offering the above-mentioned variable name service has been improved.

## 4. Conclusion

New functions and the improved performance of D300winV2 were introduced. The popularization in Japan of the programming environment in compliance with IEC61131-3 has progressed steadily. Based on the situation in Japan, Fuji Electric will continue to provide systems that contribute to the improved application development efficiency of PLC that centers on the programming environment in compliance with IEC61131-3.

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\*2 Visual Basic: A registered trademark of US Microsoft Corp., USA

\*3 Excel: A brand name of US Microsoft Corp., USA



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